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NATURAL HISTORY MUSEUM OF
LOS ANGELES COUNTY

THE LA BREA CRANE

A newly recognized member of a very old family

ILLUSTRATION BY WARREN CUTLER

OVER THE LAST 100 YEARS, THE Rancho La Brea asphalt deposits have yielded the largest collection of fossil birds in the world, comprising more than 350,000 specimens. So far, 139 species have been identified, including 24 that are now extinct. The cranes of Rancho La Brea are a small but significant portion of this collection.

Cranes—among the most stately and elegant of all birds—are today found everywhere except in South America and a few of the southern Pacific Islands. Several of the fourteen species are migratory and may fly thousands of miles between their breeding areas and wintering grounds. Although revered in a number of countries—for their beauty and grace and as symbols of steadfastness and loyalty, vigilance, and happiness—many species are endangered because of the destruction of their breeding grounds and other adversities brought about by human encroachment into their natural habitat.

Most cranes nest in wetlands, building bulky nests on the ground, but they feed in all types of open country. They usually eat vegetable matter—grains, berries, small fruits, and tender roots—but will also sometimes consume insects and their larvae, worms, snails, amphibians, reptiles, and even small mammals and birds (but rarely fish). During the migratory season in the U.S., Sandhill Cranes often gather in huge flocks to feed on waste corn left in fields after the harvest.

The Sandhill Crane is the only crane seen in southern California, where it is common in rural parts of the Imperial Valley, lower Colorado River valley, and the Carrizo Plain as an over-wintering migratory bird. It is sometimes confused with the Great Blue Heron, which is about the same size. In flight, however, cranes may easily be distinguished from herons because they hold their necks straight out, whereas herons fold theirs into a U-shape. Evidence from Rancho La Brea shows that the Sandhill Crane has been a resident of our area, at least part-time, for thousands of years.

SINCE THE OPENING of the Page Museum in 1977, all of the vertebrate fossils from Rancho La Brea have been reorganized, and in the process a number of bird specimens not previously integrated into the avian collection have come to light. In addition, in the last two

COVER AND PAGE 5: Most crane species are strongly gregarious and gather in large flocks in the seasonal passing and on the wintering range; here a flock of Sandhill Cranes begins to stir as the sun burns through the fog blanketing the roosting site. Copyright Wendy Shattil/ Bob Rozinski

In this painting, the three species of cranes from Rancho La Brea are shown together, in a close association unlikely to have occurred in life, to give an idea of their respective sizes. The Whooping Crane towers over both the Sandhill Crane and the small, newly recognized species, the La Brea Crane. The coloration of the feathers of the extinct La Brea Crane is speculative—no recognizable feathers have been recovered from the Tar Pits, and color is rarely preserved in fossils in any case.

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Cranes are noted for their beautifully complex ritualistic dances. Here, two Sandhill Cranes communicate their bond with one another using intricate movements of the wings and feet.

ELIZABETH KAUFMAN/CHRISTOPHER BARR PHOTOGRAPHY

George C. Page, founder of the Page Museum of La Brea Discoveries, at a museum party celebrating his ninety-seventh birthday.

decades, new material has been discovered through the ongoing excavation at Pit 91 as well as various salvage operations at adjacent construction sites. Several years ago, as part of my ongoing research into the fossil birds of the asphalt deposits, I decided to inventory and review all of the fossil cranes. My main goal was to identify and incorporate into the collections the new specimens that had accumulated since the fossil birds from the tar pits were first studied decades ago.

The first avian paleontologists working at Rancho La Brea had identified two species of cranes from the deposits—the Whooping Crane and the Sandhill Crane. But in my studies I soon realized that a number of small specimens originally thought to be sandhills were consistently different in many ways from all the other crane bones; they also did not match the comparable parts of the skeletons of Recent Sandhill Cranes. This was puzzling, until I began working with the fossil skulls of the La Brea cranes: one of these, a relatively long but delicately formed cranium, was clearly that of an as yet undescribed species. In the course of studying and describing the new crane, I gained some insight into how three crane species might have coexisted and shared resources in southern California during the late Pleistocene, roughly 40,000 to 10,000 years ago.

THE WHOOPING CRANE, *Grus americanus,* is North America's largest crane. This imposing bird, which stands almost 5 feet tall, is perhaps the best known symbol of bird conservation in the United States: in the last half-century, extraordinary measures have been taken to prevent its extinction. With a total pre-European-contact population of probably fewer than 2,000 individuals, the species was heavily impacted by settlement of its midcontinental breeding grounds in the 1800s and quickly became endangered. From a low of only 15 known individuals in 1941, the population of Whooping Cranes has gradually built up to over 300, one-third of which are captive birds.

Its traditionally low population size is reflected in the Whooping Crane's presence among the fossils at Rancho La Brea, where as few as eight individuals, represented by 45 bone specimens, have been found. Among the more interesting bird specimens from Rancho La Brea are the articulated feet of a single "whooper" recovered during the construction of the Page Museum. This discovery was the first where several bones from the same individual bird were found still positioned in the asphalt deposits as they had been in life.

In contrast to its larger cousin, the Sandhill Crane, *Grus canadensis,* is the most abundant North American crane, with a population numbering in excess of 500,000. Although some nonmigratory populations in the east are unstable or declining, several western states still have hunting seasons on migratory sandhills. Despite their high numbers, however, Sandhill Cranes were also threatened over much of their range earlier in this century because of the destruction of their habitat. Through the preservation of wetlands, and because of the species' unusual ability to adapt to an increased human presence, the Sandhill Crane has managed to make a strong comeback in many areas where it was once in trouble.

There is great variation in the size of adult Sandhill Cranes—they may stand anywhere from 3 to 4 feet tall, depending on the subspecies. Because southern California was probably part of the migratory route and over-wintering grounds of different subspecies in the Pleistocene, as it is today, there is a great range of variation in the size of sandhill fossils found at Rancho La Brea. At least 52 individual Sandhill Cranes have been found at Rancho La Brea, based on a total of 417 specimens.

Both the Whooping Crane and Sandhill Crane have been found as fossils from numerous sites in North America, but the sandhill always occurs in much greater numbers than its larger relative.

DICK MEIER

The tarsometatarsi, or lower leg bones, of the three species of cranes found as fossils in the tar pits at Rancho La Brea give an indication of the dramatic differences in the sizes of these closely related birds. The largest specimen, from the Whooping Crane, is about 11 inches long.

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The new La Brea Crane, *Grus pagei*, is an extinct species found only at Rancho La Brea. At least 17 individuals have been distinguished, based on a total of 42 known specimens: the species was more abundant than the Whooping Crane but much less so than the sandhill.

The La Brea Crane was the smallest of the three species from Rancho La Brea, the largest specimens being only about the size of the smallest Sandhill Cranes. In comparison to the sandhill, the La Brea Crane had a longer, narrower head and was much more gracile.

The La Brea Crane may well have been a nonmigratory species, resident only in southern California. Climatic change at the end of the Pleistocene, which brought much drier conditions to this region, probably resulted in a loss of suitable habitat for the crane and its ultimate extinction, a fate that was shared by the California Turkey, *Meleagris parapavo*, the second most abundant bird found in the tar pits.

The presence of three species of cranes from Rancho La Brea is interesting because of the potential for competition among the species. However, the marked difference in the size of the three birds would suggest that they were eating different sized food items. And they probably bred in different regions. The Sandhill and Whooping Cranes' breeding grounds are well to the north; if the La Brea Crane was a year-round resident of southern California, it may have had the crane nesting spots in the region all to itself. The three species probably enjoyed an effective partitioning of the crane habitat in southern California.

The La Brea Crane was named *Grus pagei* for Mr. George C. Page in recognition of his gift of the Page Museum of La Brea Discoveries to the people of Los Angeles. Cranes are long-lived birds and, in Japan, are a symbol of longevity. Thus it is doubly appropriate that the new species be named for Mr. Page, who remains actively interested in the museum that bears his name even as, in 1998, he marks his ninety-seventh birthday.

Kenneth E. Campbell
Curator of Ornithology

As head of the Ornithology Section, Dr. Campbell is responsible for the museum's collection of modern birds, which includes representatives of most of the extant species of cranes, as well as the fossil bird collection. He is an expert in avian evolution and paleontology and is currently studying species of fossil birds from Rancho La Brea and elsewhere; he is also involved in research in the tropical forests of Amazonia.

CALIFORNIA PARTNERS, NORTH AND SOUTH

The Natural History Museum and the Golden State Museum

THE GOLDEN STATE MUSEUM, California's newest major institution dedicated to the state's history, celebrates its gala opening in September 1998. Located in the new California State Archives Building, which was designed by the San Francisco architectural firm of Esherick, Homsey, Davis & Dodge, the downtown Sacramento museum is an important addition to exhibition centers devoted to interpreting the state's development. And its concepts and content are intimately tied to our museum's history program.

The Golden State Museum occupies two floors in the Secretary of State's new complex two blocks from the Capitol. The 35,000-square-foot exhibition area focuses on an interpretation of the state's history since 1850 through the lens of four themes:

- The Place, featuring the state's varied landscapes and geography;
- The People, and especially the rich diversity of the California population;
- The Politics—how the state's residents have forged a political process to achieve their "California dream"; and
- The Promise, and how Californians have succeeded or have failed to attain the many opportunities the state has to offer.

The exhibit is not an encyclopedia of California history but rather an elucidation of its development, based on the strengths of the holdings of the State Archives. Documents ranging from cosmetologists' licenses and a letter to the governor concerning child care for a World War II defense worker to the 1849 and 1879 state constitutions make statements about how Californians have been inspired and motivated to seek their fortunes and shape their future. Historic photographs from the archives and research centers in the state, and artifacts from the archives' collection as well as others borrowed or purchased for this exhibition, help to bring the documents to life. The displays also contain a vast assortment of media, both audio and visual, which supplement and enhance the presentation.

OUR MUSEUM'S HISTORY STAFF has participated in the creation of the Golden State Museum's development since August 1996. At that time, Curator Dr. Janet R. Fireman and I agreed to serve as project co-curators on a part-time contractual basis. Working with Secretary of State Bill Jones's staff, the California State Archivist and staff, and the design team of Harmonica/Hartman Associates in Santa Monica, we revised the exhibition's interpretative plan and determined its content. Over a period of 18 months, we were responsible for selecting documents, historic photographs, and objects for display, composing extensive label copy, and critiquing

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versions of the audio and video presentations.

In April 1997, Museum Collections Manager Beth Werling joined the project as an artifact specialist. Ms. Werling spent many hours visiting antique shops and other venues, locating objects to lend a vivid three-dimensional quality to the State Archives' document collections. Her search reached as far as Texas. In all, she amassed truckloads of objects destined for Sacramento, including an authentic gold-mining pan, an album cover from the Eagles' "Hotel California," an 1860s hand-blown glass inkwell, and a 1929 Ford Model A.

The planning of the Golden State Museum established strong ties between the Natural History Museum and the California State Archives, as well as demonstrating the curatorial strengths of our museum's history program in faraway Sacramento. In addition, the revenue generated by our historians permitted the rehiring of Collections Manager Cathleen MacDonald, who had formerly worked at the Exposition Park and Petersen museums.

Clearly, the partnership between the Natural History Museum and the Golden State Museum has benefitted both institutions. We are pleased that the results of our efforts will be quite apparent for years to come in California's newest history museum.

Tom Sitton
Curator of History

Dr. Sitton heads the museum's Seaver Center for Western History Research. He is working on a grant-funded project that will result in both the organization and increased accessibility of Seaver historical materials and a book on the history of Los Angeles from 1938 to 1953.

U.S. AND JAPAN FOCUS ON ENVIRONMENTAL EDUCATION

The Natural History Museum was one of three U.S. museums invited to participate in the first U.S./Japanese symposium on environmental learning, which was held in Ibaraki in June. Hosted by the Ibaraki Nature Museum, the gathering of science and natural history educators focused on ways that museums may take a leading role in cooperating with schools and communities to evoke awareness of global environmental issues; the opportunity to jointly develop a philosophy of environmental education was another aim of this project. Linda Abraham, Chief of Education, represented our institution at the conference; in addition to delivering a talk and serving on a panel, she conducted a workshop for Japanese teachers and children.

GIFTED STUDENTS CONSIDER EXTINCTION

In spring 1998, the Natural History Museum's Education Division was host to more than 100 fifth and sixth grade students and their parents, convened for a session of the Institute for Academic Advancement of Youth (IAAY), an organization sponsored by Johns Hopkins University to give gifted and talented students opportunities for educational challenge and enhancement. The museum was one of ten institutions nationwide chosen to host the IAAY and the only venue in southern California. The theme for the day was extinction and survival; Museum President and Director Dr. James L. Powell delivered the keynote address.

MUSEUM CONTRIBUTES TO BIODIVERSITY INVENTORY

Dr. Brian V. Brown of the Entomology Section traveled to Central America in late spring to participate with a group working on Costa Rica's All Taxon Biodiversity Inventory. The project, which is funded by various international agencies, is a large-scale effort to identify, catalog, and understand the rich biodiversity of the country. The focus of the meeting was the Diptera, or true flies, which—as one of the largest groups of organisms in the world—make up a significant portion of this biodiversity. Dr. Brown, who is an expert on the dipteran family Phoridae, participated with ten other scientists from around the world in an initial exploration of the best ways to study these insects.

NEW RESEARCH AND COLLECTIONS ADMINISTRATOR

Dr. John E. Heyning, Curator of Mammals, has been appointed Associate Deputy Director for Research and Collections. Dr. Heyning, who received his Ph.D. degree from UCLA in 1986, is a specialist in marine mammals and has been on the museum staff since 1984. In his new position, he will assist in directing the operations of one of the museum's largest administrative units; he will continue to serve as curator of mammals.

DIGITAL ARCHAEOLOGY

The Peruvian "Kilometer 4" archaeology project of Dr. Karen Wise, Assistant Curator of Anthropology, has been selected to be the first research published in a new Digital Imprint Series being created by UCLA's Institute of Archaeology. The publication, which will be issued on CD-ROM, will include a complete report of the 10-year archaeological excavation that Dr. Wise has directed at Kilometer 4. The digital format will allow for a much more complete and detailed report of scientific results of archaeological research than is possible in a print publication; in addition, its interactive dimensions will be attractive to the nonspecialist. The Digital Imprint Project is funded by the Ahmanson Foundation.

MEMBERS & DONORS NEWS

PARSONS FOUNDATION GRANT

The Ralph M. Parsons Foundation has renewed its support of the Natural History Museum with a grant of $192,497 for the Ralph M. Parsons Discovery Center at the

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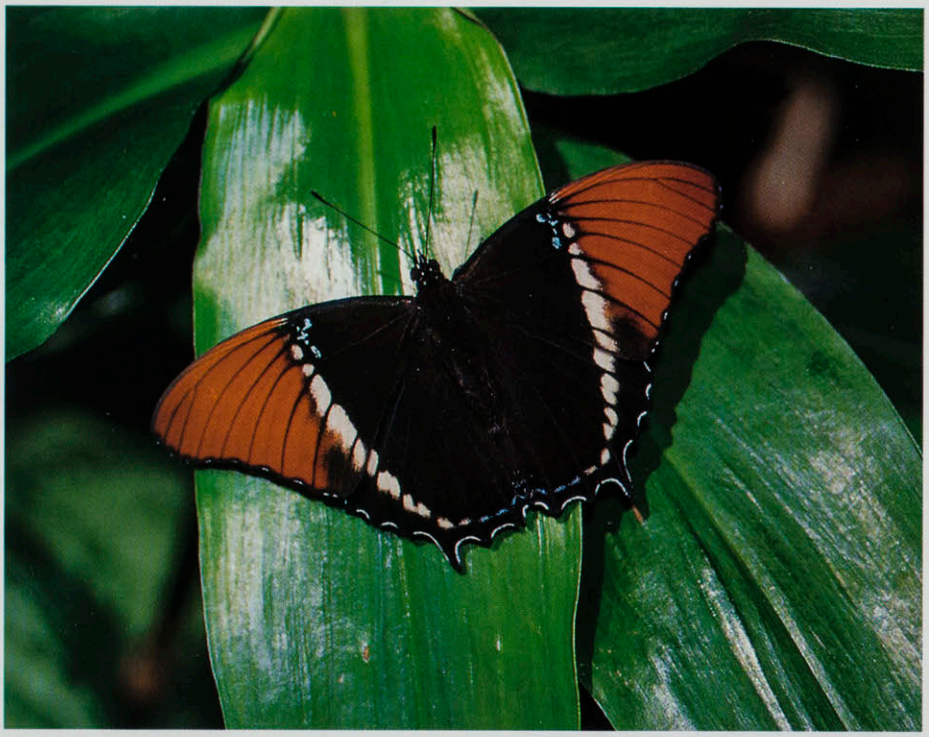
BUTTERFLY FARMING IN COSTA RICA

I AWOKE MY FIRST DAY IN COSTA RICA to the raucous calls of Scarlet Macaws. Soon I was excitedly leafing through my field guides to verify sightings of Squirrel Cuckoos, Blue-gray Tanagers, White Hawks, and Brown Jays. But it was butterflies, not birds, that had brought me to this tropical paradise, and they were everywhere. Because of its diverse habitats and equatorial position, Costa Rica—a relatively small Central American country—is home to approximately 5 percent of the world's 20,000 species of butterflies.



Armed with binoculars, more field guides, and my camera, I joined my colleagues for breakfast at a hotel in Escazu, nestled in the southern hills of Costa Rica's central plateau, just outside the capital city of San Jose. A group of seventeen insect zoo and butterfly house managers, biological illustrators, specimen dealers, university professors, and naturalists, we had gathered to learn about this country's conservation-based butterfly farming; we wanted to meet with small-scale farmers and acquire first-hand knowledge of the butterfly export business.

Our first stop was the Butterfly Farm in La Gaucima, just southwest of San Jose. Founded by Joris and Maria Brinckerhoff in 1983, this pioneering enterprise has become a popular stopover for tourists.

We followed a guide into the butterfly house, an enclosure of several thousand square feet constructed of black hardware cloth stretched over a wooden frame. Once inside, the metallic flashes off the wings of a large blue "Morpho" *(Morpho amathonte)* demanded our attention. But soon numerous other smaller yet equally spectacular butterflies began to catch my eye.

The black and apple-green *Siproeta stelenes* seemed to disappear into the vegetation as they flitted about, occasionally sipping nectar from the flowers planted in the enclosure. A number of feeding stations, stocked with rotting banana, papaya, and pineapple, lured the Owl butterfly, *Caligo memnon;* with a wingspan of more than 5 inches, this species is one of the largest of the Neotropical butterflies. The residents of the farm were easily photographed as they imbibed fluids from the feeding station's fermenting offerings.

THE DEMAND for colorful butterfly specimens, for public and personal display in Europe and North America, drives sustainable economies in Costa Rica and throughout the tropical parts of the globe. The Costa Rican Entomological Supply Company, a subsidiary of the Butterfly Farm, operates much like any other cooperative to satisfy the demand. Dozens of butterfly growers, or *campesinos,* raise as many as 60 local butterfly species, producing up to 120,000 pupae each month. Campesinos may travel considerable distances to deliver their weekly harvest of pupae to the Butterfly Farm. There, the pupae are quickly inspected for signs of disease and parasitoids, sorted to species, and carefully packed for export around the world on the same day.

We visited the butterfly rearing

operations of several campesinos, studying their techniques and exploring the possibilities of developing additional captive breeding programs for other exotic insects, such as the Elephant beetle, *Megasoma elephas.* Most campesinos employ simple backyard structures of hardware cloth stretched across frames of scrap wood and enclosing adult captives and a tangle of larval host plants. But a few have developed precisely engineered habitats with well-manicured gardens that are tourist destinations in themselves.

The campesinos inspect host plants daily for the tiny spherical or conical butterfly eggs; when found, these are

usually transferred to screened rearing cages outside the main enclosure. In a matter of days or weeks, the hatched caterpillars develop into pupae, which range in appearance from rolled-up dead leaves to silvery pendants. Surplus butterflies are either released back into the wild or kept captive to become the breeding stock for the next generation of pupae destined for the market.

***Opposite, top to bottom: Dulcedo polita*, a clear-winged butterfly; *Siproeta epaphus*, one of 60 Costa Rican butterflies bred for export; butterfly pupae are counted and examined for disease and parasitoids. *Above, left:* the brilliant blue of the female *Morpho amathonte* is caused by the surface structure of the thousands of scales on its wings; *right:* to a potential predator, the large spots on the wings of the owl butterfly, *Caligo memnon*, may look like the eyes of a vertebrate. Photographs by Art Evans.**

OUR WEEK-LONG TRAVELS included visits to several other points of biological interest, including Parque Nacional Braulio Carillo, located about 12 miles northeast of San Jose. Straddling the Cordillera Central, portions of the park are subject to a persistent blanket of clouds capable of producing seemingly endless drizzle punctuated by torrential downpours. It was here that I first observed the large Helicopter Damselflies of the genus *Mecistogaster*, whose abdomens are nearly 3 inches in length. These slender aerialists, whose wings cut the air like oars, prey upon spiders, taking them from under leaves or plucking them out of their webs. Their white wing tips make their graceful lobbing flight visible in the dark understory of the forest.

The last night of the tour was spent at a rustic private research station tucked away in a remote portion of the humid lowlands near Puerto Viejo on the Carribbean slope. As night fell, the air was filled with the mating calls of katydids and cicadas. Spiders and scorpions stalked their insect prey amidst the litter of the forest floor, apparently oblivious to the beam of my headlamp. Walking sticks quietly emerged from their hiding places in the understory to nibble along the margins of select leaves.

My efforts to record these and other activities came to an abrupt end as my camera succumbed to the stifling humidity of the forest with a loud pop, followed by the smell of burnt electronics. It was one more reminder that human technology is no match for the extremes of nature.

ARTHUR V. EVANS
Insect Zoo Director

Dr. Evans, a specialist in melolonthine scarab beetles and coauthor of An Inordinate Fondness for Beetles *(Henry Holt, 1996), is Director of the Natural History Museum's Insect Zoo. He is currently involved in the planning of a butterfly house, an exhibition of live local and exotic butterflies, to open at the Exposition Park museum in May 1999. He traveled to Costa Rica to observe butterfly husbandry techniques and to locate sources of other arthropods for display in the Insect Zoo.*

LECTURES & SPECIAL EVENTS

Lecture

■ BALLOON ARCHAEOLOGY

Minoan Crete from the Air

Sunday, November 8, 2 p.m., Jean Delacour Auditorium, Museum of Natural History

Dr. J. Wilson Myers, author of *The Aerial Atlas of Ancient Crete* (University of California, 1992) and member of the American School of Classical Studies at Athens, spent 5 years in Minoan Crete taking aerial photographs of palaces, settlements, and tombs. These images allowed archaeologists to study patterns and relationships at complex sites and preserve information otherwise lost through erosion or continued excavation. Instead of using high-tech methods such as satellite photographs or aerial shots from jet aircraft, Dr. Myers used radio-controlled cameras suspended from a tethered, unmanned balloon to obtain his pictures. In this beautifully illustrated lecture, he will describe the methods and results of his study. The event is cosponsored by the Archaeological Institute of America and is supported by the AIA's Martha Sharp Joukowsky Lectureship. Early registration is $6 NHM/AIA members, $8 nonmembers, $4 students with ID; after Friday, October 30, fees are $7 NHM/AIA members, $9 nonmembers, $5 students with ID.

Educator workshop and field trip

■ SHARKS! FACT AND FANTASY

Saturday, November 7, 9 a.m. to 5 p.m., and Sunday, November 8, 6 a.m. to 4 p.m.

Learn the facts about sharks and shark behavior, and discover methods of integrating information on shark evolution, reproduction, and adaptation into your curriculum. Saturday's workshop will take place at the Museum of Natural History; on Sunday, we'll travel to Santa Catalina Island to dive with blue sharks. Protected in the water in a snorkeling cage, we will observe the sharks in their natural environment while assisting researchers from the Southern California Marine Institute in their ongoing juvenile blue shark tagging program. Marine biologists from the Hydrosphere team and museum educators will give presentations and lead workshops as we travel to and from the island on board the *Pacific Explorer*. Breakfast and lunch on Sunday are included. $105 members, $115 nonmembers. Salary Point Credit is available; please call 213/763-3240 for more information.

Concert

■ JUST DESSERTS

Saturday, October 24, 7 p.m., William S. Hart Mansion

Enjoy music in the mansion presented by pianist Tessie Chua Chiaco, who has delighted audiences in Europe, Asia, and the Americas for almost 50 years. Ms. Chiaco will perform "Just Desserts," a program of delightful music from the classical piano repertoire; featured composers include Lecuona, Liszt, Chopin, Debussy, Beethoven, Mozart, and Rachmaninoff. A dessert reception immediately follows the performance. Seating is limited; for more information and reservations, please call 213/763-3534 or 805/254-4584. $20 members, $25 nonmembers.

Symposium

■ ALEXANDER THE GREAT AND AKHNATEN'S AMARNA

Friday evening, Saturday, and Sunday, September 25 to 27, Museum of Natural History

Join us for a weekend of Egyptology in the 10th annual Egyptian symposium cosponsored by the Natural History Museum and the American Research Center in Egypt, Southern California Chapter. Dr. Geoffrey Martin of The University of London will chair the sessions; the list of speakers includes such respected Egyptologists as Dr. William Murnane of Memphis State University and Dr. Peter Kuhlman, Director of the Oracle Temple Project in Siwa. We will explore the period of Alexander in Egypt, as well as one of the greatest of ancient Egypt's cities, Amarna. $140 NHM/ARCE members, $175 nonmembers, $95 students (student admission includes all events except the evening reception).

■ RAPTORS OF SOUTHERN CALIFORNIA

Sunday, October 18, 2 p.m., Jean Delacour Auditorium, Museum of Natural History

Raptor photographer Ned Harris shares his fascination with the amazing world of birds of prey. He has been documenting these incredible animals for the past 18 years and in the process has studied their natural history. In this illustrated talk, he will describe what he has learned and explain how he captures the wonderful images that he has produced and how he deals with the challenge of taking photographs of birds in flight. $7 members, $9 nonmembers, $5 students with current I.D.; discounts offered with early registration.

ADULT FIELD TRIPS

Walking tour

■ THE UPS AND DOWNS OF L.A.

Saturday, October 3, 9:30 a.m.

Explore the historic stairway neighborhoods of Los Feliz with Larry Gordon, author of *Stairway Walks in Los Angeles* (Wilderness Press, 1990). In the early decades of the twentieth century entire neighborhoods in Los Angeles were designed to be accessible only by steps. Although many of these areas have been lost to urban development and changes in the way we live, some of the remarkably cloistered communities survive. During our walk we will see homes dating to the 1920s and 1930s and several examples of the work of noted architects Frank Lloyd Wright and R.M. Schindler. Portions of the walk are strenuous, with steep stairways. $20 members, $25 nonmembers.

■ SHARK DIVE!

Sunday, October 4, 6:30 a.m. to 5 p.m. Children ages 8 and older welcome if accompanied by an adult

Join us on a breathtaking voyage into the mysterious realm of the blue shark. We'll safely enter the water in the protected setting of a specially designed snorkeling cage to observe blue sharks in their natural environment off the coast of Catalina Island. Participants may even have the

opportunity to assist researchers from the Southern California Marine Institute in their ongoing program of tagging juvenile blue sharks. Marine biologists from the Hydrosphere team and museum instructors will round out our day with presentations and workshops on shark behavior and natural history, oceanography, and navigation. Masks and snorkels, children's wetsuits, breakfast, lunch and two snacks are included; adults must provide their own wetsuits. Space in this very popular adventure is limited. $100 members, $110 nonmembers.

Bus Tour

■ TAKE FLIGHT IN THE ANTELOPE VALLEY

Saturday, November 21, 8 a.m. to 5 p.m.

The grasslands and agricultural fields of the Antelope Valley, a finger of the Mojave Desert that extends through northernmost Los Angeles County, are renowned for their concentrations of wintering birds of prey. Museum ornithologist Kimball Garrett leads a natural history tour of this region in search of Golden Eagles, Prairie Falcons, White-tailed Kites, Ferruginous Hawks, and a variety of other raptors. We will learn to identify these birds as we observe their foraging behavior and interactions with other species. Bring binoculars, a sack lunch, and drinking water; we will depart from the Exposition Park museum at 8 a.m. in an air-conditioned coach. $50 members, $60 nonmembers.

■ TRACKING THE MONARCH BUTTERFLY

Orientation: Wednesday, December 9, 7 to 8:30 p.m. Field trips: Saturday, December 12, 10 a.m. to 1 p.m. (children ages 10 and older, accompanied by an adult) and Sunday, December 13, 10 a.m. to 2 p.m. (adults)

Each year monarch butterflies living west of the Rockies migrate hundreds of miles to spend the winter on the mild California coast. At an over-wintering roost in Santa Barbara, we'll observe thousands of these delicate yet hardy insects. In the orientation class, Walt Sakai, a lepidopterist and professor of life sciences at Santa Monica City College, will discuss the monarch's life cycle and migratory behavior. On the field trip, we'll learn to tag the butterflies so that naturalists can track their migration. Participants provide their own transportation to the site and a picnic lunch. $15 members, $20 nonmembers.

■ SEASHELLS BY THE SEASHORE

Orientation: Wednesday, November 18, 7 to 9 p.m. Field trip, Saturday, November 21, 2 to 5:30 p.m.

Dr. James McLean, Curator of Malacology at the Natural History Museum, describes the lifestyles of the organisms that produce "seashells" and leads a behind-the-scenes tour of the museum's marine mollusk collection, the third largest in the United States. On Wednesday, we will have rare after-hours look at the collection, which is worldwide in scope. The following weekend, Dr. McLean will join us on the Palos Verdes Peninsula, where we can see some local mollusks at work in their intertidal habitat. Participants provide their own transportation for the field trip; space is limited. $20 members, $25 nonmembers.

HUNTERS OF THE SKY

For thousands of years, the birds of prey—eagles, hawks, falcons, owls, and osprey—have maintained a grip on the human imagination. Raptors have been revered as divine messengers, prized as hunting companions, celebrated as symbols of majesty and power, and reviled as deadly killers and scavengers. The lengthy history of their interactions with people and their use as symbols in art and folklore around the world attest to the power of the appeal of these birds.

In *Hunters of the Sky*, a large collection of mounted specimens highlights the biodiversitiy that exists among raptors. On view in the Museum of Natural History from October 3, 1998, to January 3, 1999, the exhibition explores the lifestyles of the birds of prey through recreations of nests and habitats, interactive stations, and displays of artifacts from many cultures. Impassioned and controversial conservation efforts on behalf of California condors, peregrine falcons, bald eagles, and the northern spotted owl are examined in videos that have been praised for their balanced presentations of the complex economic and ecological issues at stake. And at computerized polling stations, visitors are invited to consider and express their own opinions on environmental ethics and the role of humans in the natural world.

***Hunters of the Sky* was produced by the Science Museum of Minnesota in collaboration with the Raptor Center at the University of Minnesota. The exhibition is supported by major grants from the National Science Foundation and the National Endowment for the Humanities; additional funding is provided by Wildlife Forever.**

PHOTOGRAPH COURTESY CACHUMA LAKE RECREATION AREA, SANTA BARBARA COUNTY PARKS

PROGRAMS FOR MEMBERS AND VISITORS CONTINUED

ADULT CLASSES

Workshop

■ WASHI

Japanese Hand-made Paper

Saturday, September 12, 10 a.m. to noon, Education Classrooms, Museum of Natural History

Artist Peggy Hasegawa demonstrates how to create washi—beautiful Japanese paper—using a technique that combines Western and Japanese traditions. You will learn the entire process, in which flax is cooked, beaten, blended, and then screened to create richly colored and textured papers. Ms. Hasegawa will also show the unique effects produced by introducing different plants into the mixture. And you will leave the workshop with your own papers and the skills you need to continue this fine craft at home. $40 members, $50 nonmembers.

■ LOOPED ROCK FETISH POUCHES

Saturday, December 5, 9 a.m. to 4 p.m., Page Museum

Learn one of the most ancient of basketry techniques while creating a fetish pouch. We'll embellish our finished creations with beads, feathers, or cherished objects. Instructor Judy Mulford, basketry artist and educator, invites students of all skill levels. $50 members, $60 nonmembers.

CHILDREN'S & FAMILY PROGRAMS

Tour

■ LIONS AND TIGERS AND BEARS, OH MY!

Saturday, September 19, 9 to 11:30 a.m. Children ages 7 and older, accompanied by an adult

On your private tour of the Wildlife Waystation, one of southern California's largest facilities for the recovery and rehabilitation of exotic animals, you'll see lions, tigers, jaguars, wolves, alligators, and even baby grizzly bears as well as smaller creatures such as opossums, squirrels, and all sorts of birds. Each year, the Waystation gives 4,000 to 5,000 animals in distress a fresh start; the docents there will let you take a close look at some of the current residents of the care facility and tell you their stories. $25 members, $30 nonmembers

Sleepover

■ CAR DREAMS!!!

Saturday, September 19 through Sunday, September 20, 7 p.m. to 8:30 a.m., Petersen Automotive Museum. Children ages 5 and older, accompanied by an adult

Get your Petersen overnight driver's permit, as we back up to the early 1900s and then zoom towards the future of the automobile. You'll get to take a flashlight tour through the museum's vault, cruise the back alleys of Los Angeles in the Streetscape exhibitions, create car crafts to take home, and tell car stories. An evening snack and breakfast are included; bring your own sleeping bags and air mattresses. $40 members, $50 nonmembers.

Sleepover

■ BOO & GOO AT THE TAR PITS

Overnight, Saturday and Sunday, October 24 to 25, 7 p.m. to 8:30 a.m., Page Museum. Children ages 5 and older, accompanied by an adult

Join in on the second annual Halloween Campout at the Tar Pits. We'll take a special tour of the museum, do gooey crafts, and meet some spooky creatures of the night with Wildlife on Wheels. We'll also trick-or-treat by flashlight through the museum's mammoths, mastodons, and saber-toothed cats. Please wear your costumes for this fun-filled night! An evening snack and a light breakfast are included; bring your own sleeping bags and air mattresses. $40 members, $50 nonmembers.

Class for preschoolers

■ DISCOVER DINOSAURS

Monday, September 28 (3 and 4 year olds, 10 to 11:30 a.m.; 5 year olds, 12:30-2 p.m.), Education Classrooms, Museum of Natural History.

Bring your preschool child for an exploration of the amazing world of dinosaurs. We will learn all about these prehistoric creatures as we read stories, enjoy games and crafts, and take a special tour of the Dinosaur Hall. Adult/child pair: $20 members, $25 nonmembers

Field trip

CONDORS AT THE ZOO

Sunday, November 15, 10 a.m. Children ages 5 and older, accompanied by an adult

Keepers at the Los Angeles Zoo will give us an exciting tour of the California Condor section and tell us about their breeding program. As you learn about captive breeding, rehabilitation, and the status of the wild condor populations, you will have the opportunity to view these stately birds of prey in their zoo habitats from behind the cover of blinds; we'll also visit the nursery and monitoring stations. $20 members, $25 nonmembers.

MIKE WALLACE

Class for preschoolers

■ FINE FEATHERED FRIENDS

Mondays, October 5 (3 year olds, 10 to 11:30 a.m.; 4 year olds, 12:30 to 2 p.m.) and October 26 (3 year olds, 10 to 11:30 a.m.; 5 year olds, 12:30 to 2 p.m.), Education Classrooms, Museum of Natural History

Meet the "Hunters of the Sky" with your preschool child. We will learn what makes birds of prey different from other birds and how they are equipped to be such good hunters. After a period of reading stories and enjoying games and crafts, we'll take a special tour of the museum's visiting exhibit on raptors. Adult/child pair: $20 members, $25 nonmembers

Sleepover

■ NIGHT OWLS IN THE MUSEUM

Overnight, Saturday and Sunday, October 3 to 4, 7 p.m. to 8:30 a.m., Museum of Natural History. Children ages 5 and older, accompanied by an adult

Spend the night in *Hunters of the Sky*, the museum's visiting exhibit on birds of prey. The group includes some of the largest and most magnificent birds, and we'll learn how they hunt, take care of their young, and survive in some very unusual habitats. We will be introduced to some live raptors, enjoy a special tour of the new exhibit, and have fun with fine-feathered crafts and games. An evening snack and a light breakfast are included; bring your own sleeping bags and air mattresses. $40 members, $50 nonmembers.

Family camping trip

■ FOSSIL HUNTING IN RED ROCK CANYON

Friday through Sunday, October 9 to 11. Open to families with children of all ages

Search for fossils with Curator Dr. Dave Whistler, the only paleontologist with a collecting permit for Red Rock Canyon. We'll take nature hikes, learn about the unique geology of the region, and roast marshmallows around the evening campfire. Best of all, parents can relax while Helen Whistler prepares all three meals on Saturday as well as breakfast on Sunday. You provide transportation and camping gear, we'll take care of the rest! Arrive anytime after noon on Friday. Members: $80 child, $110 adult; nonmembers: $90 child, $120 adult.

Announcement

■ ARTIFACT "TAKE-OUT"

Museum Specimens for Loan

Educators, parents, artists and naturalists: visit your Members' Loan Service for a wide selection of science specimens, historical objects and models, and cultural artifacts perfectly suited for classroom enhancement, special projects, or home study. Our unique loan collection is designed to stimulate conversation and spark enthusiasm in budding scientists, naturalists, anthropologists, and historians.

Offered as one of the many benefits of museum membership, individual items as well as thematic teaching kits may be borrowed for a 2-week loan period. Teaching kits provide an in-depth study of a subject, with hands-on specimens, children's books, videos, posters, and an educator's notebook filled with background information and classroom activities, all carefully packed in a portable trunk. We currently have kits on whales, sharks, cats, and the illegal wildlife trade as well as on Latin American and African cultures. Stop by the Members' Loan Service counter, located in the Discovery Center, to see how you can enhance your child's classroom or enliven your home environment! For more information please call the loan counter during program hours, 213/763-3228, or contact the Loan Programs Coordinator at 213/763-3345. **Program hours: Thursdays, 2 to 4:30 p.m. and Saturdays, 10 a.m. to 2 p.m.**

PUBLIC PROGRAMS RESERVATION FORM

■ **By telephone:** Use your MasterCard or VISA. Call the Education Division at 213/763-3534, weekdays, 8 a.m. to 4 p.m. Credit cards are accepted only with a minimum charge of $20.

■ **By mail:** Complete the form below, fill in the charge information or enclose a check payable to Museum Foundation, and return your order form and payment with a self-addressed, stamped envelope. The form may be duplicated. Mail to: ***Education Division, Natural History Museum, 900 Exposition Boulevard, Los Angeles, CA 90007***

■ **Important: Reservation, Waiting List and Refund Policies.** Preregistration is required for all classes, workshops, and field trips and is recommended for all other Education Division programs. Tickets to auditorium events may be purchased at the door on a first-come, first-served basis; seating is not reserved. Reservations are not necessary for Family Fundays. Applicants for filled programs will be placed on a waiting list and contacted if vacancies or rescheduling occur. If you have paid for a filled program, your payment will be refunded in 4-6 weeks.

Cancellations must be made at least 6 business days prior to the first day of an event for the registrant to be eligible for a partial refund. No refunds can be given for cancellations made in the 5 days before the event.

Dates and times of programs are subject to change, and class sizes are limited. Please call 213/763-3534 weekdays between 8 a.m. and 4 p.m. to verify program dates, times, and availability.

■ **Special Assistance Available.** If you wish to attend a museum event and require auxiliary aids or services, please contact the museums' Americans with Disabilities Act (ADA) Compliance Officer at least three (3) business days prior to the event. The ADA Compliance Officer may be reached by telephoning 213/763-3417 (voice) or by calling that number via California Relay Service at 800/735-2929 (TTY).

( )
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BUSINESS

NAME (Please Print Clearly)

ADDRESS CITY STATE ZIP CODE

Mail to:
Education Division
Natural History Museum
900 Exposition Blvd.
Los Angeles, CA 90007

Program	Number of participants	Price	Total Price

❑ My check is enclosed

❑ Charge my credit card:
- ❑ MasterCard
- ❑ VISA

Total Remittance

Credit Card # Expiration Date

Signature

Please list children's names, ages, and programs in which they are enrolling:

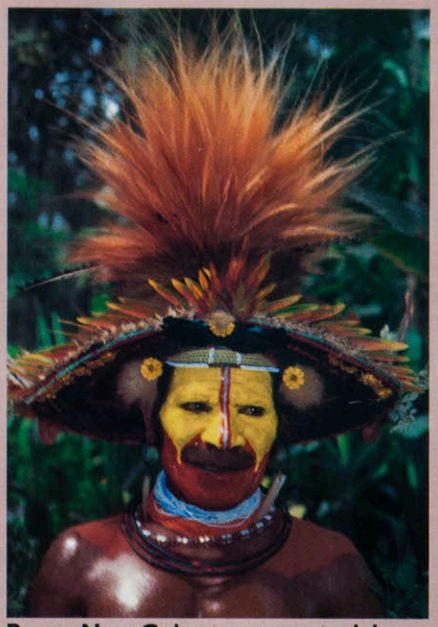
TRAVEL OUT OF THE ORDINARY . . .

Get off the beaten paths, and discover worlds apart!

The Natural History Museum has an exciting new program of travel, with an array of unusual destinations and customized itineraries specifically tailored to our sophisticated Museum Members.

Each of our plans features an asset that only we can offer—you are accompanied on your trip by one of the museum's own experts, carefully chosen to add knowledgeable perspective and uncommon dimensions to your experience.

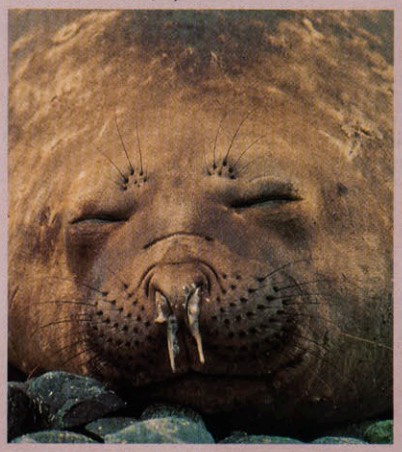
Contact our travel office today, and take the first steps toward an extraordinary adventure with the Natural History Museum.



Papua New Guinea, an equatorial paradise, May 18 to June 1, 1999 from $5,495*, including all airfare

Big game, birds, and beetles in South Africa, February 28 to March 16, 1999 from $4,790*, including airfare from Miami

A cruise around Antarctica, land of extremes, January 24 to February 8, 1999 cabins from $6,675*



To receive a detailed brochure on 1998 and 1999 museum travel opportunities or obtain more information about a specific destination shown here, please call Christine Robison at 213/763-3350. Or visit our Web page at www.nhm.org/travel.

A yacht tour of the Belize Barrier Reef, February 18-27, 1999 from $2,895*

Photographs copyrighted, used with permission: Papua New Guinea, John C. Hopper. South Africa, Bill McComas. Antarctica, Ralph Clevenger. Belize, Robert Nansen.

*Price per person, all accommodations and land transport included.

MUSEUM ON THE MOVE CONTINUED

continued from page 7

Exposition Park museum, which opened in 1987 and has introduced more than 3 million children to the principles of science and history through interactive displays and experiential learning.

The Ralph M. Parsons Foundation, established by Mr. Parsons in 1961, has become one of the major philanthropic institutions in California, with an emphasis on higher education, social impact, civic and cultural programs, and health. Its new grant to the museum will be used to enhance current exhibits in the Discovery Center, increase training for the center's staff, and create new displays and educational materials.

■ ROBERT G. LANE MEMORIAL FUND

In late February, the Natural History Museum and Los Angeles community lost a friend and staunch supporter. Robert G. Lane, managing partner in the law firm of Paul, Hastings, Janofsky, & Walker and General Counsel for USC, had been an active member of the museum's Alliance Board since 1992 and, with his wife, Mary, was also a member of the Fellows. At his death, the Lane family requested that remembrances in his honor be made to the Robert G. Lane Memorial Fund at the museum.

By May, the fund had received over $24,000 in gifts. In accordance with Mr. Lane's lifelong community involvement, the fund will help support the museum's Days of Sunshine program, which provides hundreds of children from local homeless shelters and missions with science education and enjoyable activities at the George C. Page Museum.

Mr. Lane is greatly missed. But through his generosity and the generosity of his family and friends, he will continue to have a significant impact on the museum and the children of Los Angeles.

■ MEMBERS' ONLY OPENING

Watch your mailbox! In September, members of the Natural History Museum will receive an invitation to a special event celebrating the October opening of *Hunters of the Sky*, an exhibition about birds of prey. Patron level members ($150 and above) will

also be invited to an exclusive event in conjunction with the exhibition opening.

FOOTBALL SEASON INFORMATION

USC football games at the Coliseum bring crowds of people to Exposition Park. On days when there is a game, fees for parking in the Museum of Natural History parking lots range from $5 to $10, and the lots fill quickly. Please plan ahead when visiting the Exposition Park museum on weekends this fall.

The dates of scheduled games are September 12, October 3, 10, and 31, and November 14 and 28. For information on these and other Coliseum events, please call 213/748-6131.

CURATORS' CUPBOARDS OPEN FOR A DAY!

On Sunday, September 20, from 10 a.m. to 4 p.m., museum treasures never before seen by visitors will be displayed by their "keepers," the curatorial staff members of the Natural History Museum, who will be on hand to describe the objects and give visitors a close look at some unusual features of each item. Among the more than 200 artifacts and specimens to be exhibited during this special event are the skull of a killer whale, a rare duck-billed platypus from Australia, giant beetles from the Amazon rainforest, Amelia Earhart's diary, beautiful but deadly poisonous snakes, fossils unearthed during the Metro Rail tunnel excavations, unusual fish from Antarctica, and one of the largest of the modern invertebrates—the giant Japanese spider crab. In addition, our entomologists will give demonstrations in insect pinning and butterfly spreading.

The contents of the "Curators' Cupboards" will be arrayed in the North American and African Mammal Halls of the Exposition Park Museum. The event is free with museum admission, which of course is free to members.

PHOTOGRAPHS BY DICK MEIER

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As of August 1, 1998

The Natural History Museum exists to advance knowledge and to enable people of all ages, backgrounds, and interests to understand and appreciate their natural and cultural heritage. The museum assembles, conserves, interprets, and holds in trust collections of irreplaceable objects from nature and human history. These collections reveal the history of the Earth and the evolution and diversity of life and culture. They sustain programs of research, exhibits, education, and publication.

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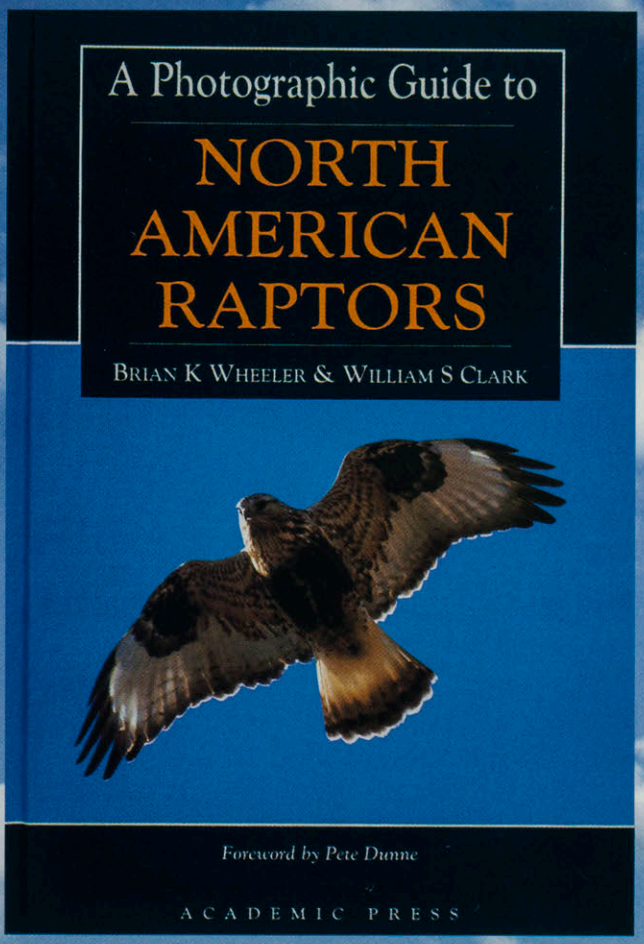
FROM THE HUNTERS OF THE SKY GALLERY STORE



Raptor-watching is exciting and great fun, but identifying birds of prey can be a challenge. *A Photographic Guide to North American Raptors* is the perfect solution. The book includes 377 color photographs, text describing the plumage of the forty-two species of diurnal raptors found in North America, and fourteen discussions of the most difficult raptor identification problems. Hardbound, $32

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